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ZOOLOGY.

The Irritability of Noctiluca.—M. Jean Massart has been conducting a series of experiments to ascertain to what stimulants the Noctilucæ respond, as shown by their phosphorescence, and to what extent the phosphorescence is modified by exterior agencies. The author finds that these organisms are sensitive (1) to a slight agitation of the water, (2) to sudden variations in the temperature and density of the water, and (3) to a great number of chemical substances. As to the first stimulant mentioned, the author discovered, by an ingenious experiment, that the agitation of the water produces a deformation of the body of the Noctiluca, and it is this deformation which causes the phosphorescence, and not a vibration transferred to the animal from the water in motion. The experiments testing the effect of certain volatile substances upon the organisms are exceedingly interesting. Amyline produces hyperesthesia, the light is more intense than in normal individuals. This condition lasts for five minutes, then all is dark. At a slight blow on the vessel the phosphorescence reappears, showing that sensibility has not been lost. Bromoform acts as an anesthetic. For about five minutes the Noctiluca subjected to its influence emit a feeble light which slowly fades out. At the end of twenty-five minutes the light is almost imperceptible; anesthesia persists. After twenty hours the normal state is recovered. The effect of acetone is similar, but more rapid in action. At the end of five minutes the phosphorescence disappears entirely, and at the end of twenty-eight minutes a slight tap on the vessel causes a diffused light, which persists for some seconds showing a return to the normal state.

Some substances produce anesthesia immediately, without any display of irritability (alcohol, methyl and paraldehyde); others result in the death of the organism without any luminous reaction (piperidine). Chlorhydrate of morphine and metaphosphate of sodium appear to have no effect upon the Noctiluca, which is astonishing since the latter substance is considered an energetic coagulant of the albuminoids.

While a slight agitation of the water containing Noctiluca increases the phosphorescent light, a violent shaking destroys it. This the author believes, is due to a blunting of the sensibility of the organism to the shock. A few minutes in quiet and darkness restores the animal to its normal irritability.

In general, the Noctiluca responds more readily to stimuli at night than in the day-time, and this is true even under artificial conditions. For instance, the record of one set of animals kept in the light from the beginning to the end of the experiment, and that of another kept in the dark is almost identical. M. Massart is inclined to attribute this regular variation of sensitiveness to memory on the part of the animal rather than to the influence of light, and his experiments would appear to prove his theory.

That the irritability of the Noctiluca varies with the temperature and density of the water is demonstrated in a few carefully conducted experiments, the results of which are given in tabulated form. Incidentally, M. Massart observed that the normal specific gravity of the the Noctiluca is 1.014, but that this is increased or lessened with the varying density of the water.

In conclusion, the author calls attention to the analogy between the irritability of the *Mimosa pudica* and that of the Noctiluca, the one manifesting itself in movement, the other by the emission of light. (Bull. Sci. de la France et de la Belgique, T. XXV, 1er Partie, 1893.)

The Production of Sound Among the Ants.—That ants have some means of communicating with each other is well-established. The experiments of Landois and those of Lubbock suggest that this communication is carried on by means of sounds produced and heard by these small creatures, but which the human ear is incapable of appreciating. The observations of M. C. Janet, published in *Ann. Entomol. de France* (Vol. LXII, p. 159) show that certain species of the Formicidae, notably *Myrmica rubra* L. and *Tetramorium cœspitum* L., are in the habit of making a stridulating noise, probably by reciprocally rubbing superficial parts of the body. A demonstration of this fact is very simple. On a small pane of glass put a ring of soft putty, and after carefully dropping in the middle of the ring, by means of a funnel, a mass of ants freed from bits of earth or vegetable matter, quickly cover them with a second pane of glass and press it down until there is just barely room between the two pieces of glass for the ants to move. If provision has been made for renewal of air the imprisoned ants will live for several days. On holding this little box of ants to the ear and listening attentively, a murmur is heard very similar to that made by a liquid boiling gently in a closed vessel, and before long distinct stridulations can be heard in the midst of the murmuring. These sounds are heard only when the ants are disturbed.

M. Janet concludes that the numerous rugose surfaces which are found on the body of ants in such places that two of them can be rubbed together, are probably the organs which produce the stridulating sounds of the Formicidae. These rugosities have other uses. For instance, those about the articulations serve to hold the body stiff at will at that particular point, an advantage to the animal in pushing or carrying heavy weights up steep slopes. (Revue Scientifique, January, 1894.)

Zoological News—MOLLUSCA.—Mr. J. I. Peck's report on the Pteropods and Heteropods collected by the U. S. Fish Commission steamer Albatross, during the voyage from Norfolk Va., to San Francisco, Cal., 1887–88, is published in the Proceeds. U. S. Natl. Mus., Vol. XVI. The material is the result of both dredging and surface collection. The Pteropods belong almost exclusively to the family Cavoliniidae, representing all the species except one of the genus Cavolinia, the species of Cuvierina, as also six of Clio. The Heteropods are included in the three genera Atlanta, Carinaria and Ianthina. According to the author, results show that there are no marked distinctions between the kinds and distribution in the Atlantic and Pacific waters of northern South America.

UROCHORDA—A new Tunicate from the Pacific Coast is described by Mr. W. E. Ritter, who assigns it to the genus Perophora. The new species presents an interesting character. In very many, though not all of the colonies, the ascidiozooids are as completely imbedded in a common test as they are in Botryllus or Goodsiria. In recognition of this transitional character the author proposes for it *annectens* as a specific name. (Cal. Acad. Sci., Vol. IV, 1893.)

MAMMALIA—Two new Neotomæ from the Plateau region of Arizona are described by C. Hart Merriam. One of the new species, *N. arizonæ*, presents a remarkable combination of the external characters of the bushy-tailed wood rats with the cranial characters of the round-tailed species. The other, *N. pinetorum*, is a round-tailed species allied to the *N. fuscipes* group of California. In this connection Mr. Merriam calls attention to an important cranial character, heretofore overlooked, which serves to distinguish *Teonoma* from *Neotoma*. In the skulls of the round-tailed wood rats there is a long open slit on each side of the presphenoid and anterior third of the basisphenoid. These openings the author designates the *spheno-palatine vacuities*. (Proceeds. Biol. Soc. Wash., 1893.)